WHAT IS CLAIMED IS:

1. An analyzer analyzing a tubular structure of an object to be examined, comprising:

a preparing unit configured to prepare a plurality of sets of three-dimensional image data of the same object examined;

a structure extracting unit configured to extract image data indicative of a three-dimensional tubular structure, set by set, from the plurality of sets of three-dimensional image data, thereby a plurality of sets of structure image data being produced;

a reference direction specifying unit configured to specify a reference direction to the plurality of sets of three-dimensional image data;

a reference point specifying unit configured to specify a reference point to each center line of the tubular structure contained in each of the plurality of sets of structure image data;

a stretched image producing unit configured to produce, from each of the plurality of sets of structure image data, data of a stretched image of the tubular structure in each of plural sections which are mutually the same with regard to three-dimensional positions thereof and determined based on the reference direction, thereby a plurality of sets of data of stretched images being produced; and

a stretched image displaying unit configured to display the plurality of sets of data of stretched images aligned based on the reference point.

2. The analyzer according to claim 1, wherein the stretched image producing unit comprises a contour data extracting unit configured to

extract contour data of the tubular structure from each of the plurality of sets of structure image data by using the center line as a reference,

the analyzer further comprising:

a contour displaying unit configured to display the contour data of the plurality of sets of contour data of the tubular structure;

a change-information acquiring unit configured to acquire information in relation to time-lapse changes of the tubular structure on the basis of the contours of a plurality of tubular structures displayed by the contour displaying unit; and

an information displaying unit configured to display the acquired information in relation to the time-lapse changes.

3. The analyzer according to claim 2, wherein the information displaying unit is a unit displaying in a color map the acquired information in relation to the time-lapse changes.

4. The analyzer according to claim 1, comprising:

a reference image producing unit configured to produce, as data of a reference image, image data as one of a volume rendering image and a maximum intensity projection (MIP) image of the three-dimensional image data;

a reference image displaying unit configured to display the produced data of the reference image; and

an indicator displaying unit configured to display an indicator on the reference image displayed by the reference image displaying unit, the indicator indicating a direction of a section of the stretched image.

5. The analyzer according to claim 4, wherein the indicator includes two markers individually placed at arbitrary positions on both wall portions of the tubular structure in the stretched image and two markers individually placed at both wall portions of the tubular structure in the reference image, the two markers on the stretched image positionally corresponding, for each wall of the tubular structure, to the two markers on the reference image.

6. The analyzer according to claim 5, wherein the indicator includes a further marker not only being superimposed on the reference image through the two markers on the reference image but also indicating a contour shape of the tubular structure.

7. The analyzer according to claim 4, wherein the indicator includes a cursor bar placed at an arbitrary poison on the stretched image and two markers individually placed on both wall portions of the tubular structure in the reference image, both side wall portions at which the two markers are individually placed being positionally corresponding to the cursor bar.

8. An analyzer analyzing a tubular structure of an object to be examined, comprising:

a preparing unit configured to prepare three-dimensional image data of the same object examined;

an image data producing unit configured to produce, from the three-dimensional image data, data of at least one of a volume rendering image of the object, a maximum intensity projection (MIP) image of the

three-dimensional image data, a flat reformatted image at an arbitrary section in the three-dimensional image data;

a curved reformatted image producing unit configured to produce data of a curved reformatted image from the three-dimensional image data;

a center line producing unit configured to produce three-dimensional position data of a center line of the tubular structure by using the thee-dimensional image data;

a reference image displaying unit configured to display the center line by overlaying the position data of the center line on data of a reference image consisting of one of the volume rendering image, the maximum intensity projection (MIP) image, the flat reformatted image, and the curved reformatted image;

a curved reformatted image displaying unit configured to display the center line by overlaying the position data of the center line on the data of the curved reformatted image;

a center line correcting unit configured to be used for correcting a shape of the center line overlaid on the reference image displayed by the reference image displaying unit; and

a curved reformatted image updating unit configured to reproduce, from the three-dimensional image data, the data of the curved reformatted image data displayed by the curved reformatted image displaying unit, in response to a correction of the shape of the center line on the reference image through the center line correcting unit, and to update the overlaying display of the center line on the reference image, updating the curved reformatted image responding substantially in real time to correcting the shape of the center line.

9. The analyzer according to claim 8, comprising:

an analysis unit configured to analyze a morphological feature of the tubular structure;

a reception unit configured to receive a signal indicating whether or not the position of the center line displayed on both the reference image and the curved reformatted image is acceptable; and

an analysis permitting unit configured to permit the analysis unit to analyze the morphological feature of the tubular structure only when the signal received by the reception unit indicates that the position of the center line is acceptable.

10. The analyzer according to claim 8, comprising:

a specifying unit configured to allow a plurality of markers to be specified on the tubular structure in the reference image, the plurality of markers indicating desired both end positions on the tubular structure and desired zero or more passage positions located between both the desired end positions;

a unit configured to divide the plurality of markers into a plurality of pairs of markers so that the plurality of pairs of markers are sequentially ordered according to a specifying order along which the plurality of markers are specified through the specifying unit;

a unit configured to display on the reference image segments mutually connecting the plurality of pairs of markers;

a unit configured to allow one or more additional markers to be specified on the reference image, the additional markers indicating additional passage positions;

a unit configured to re-decide the order of the plurality of pairs of markers by deciding that the additional markers should be located between which two pairs of the plurality of pairs of markers when the additional markers are specified; and

a unit configured to reproduce the data of the center line based on the plurality of pairs of markers re-decided.

11. The analyzer according to claim 10, comprising:

a unit used for moving the additionally specified markers on the reference image;

a unit configured to update the data of the curved reformatted image using the three-dimensional image data and to re-display the updated data of the curved reformatted image, in response to a move of the additionally specified markers, updating the curved reformatted image responding substantially in real time to the move of the additional markers.

12. An analyzer analyzing a tubular structure of an object to be examined, comprising:

a preparing unit configured to prepare three-dimensional image data of the same object examined;

an image data producing unit configured to produce, from the three-dimensional image data, as data of a reference image, data of at least one of a volume rendering image of the object, a maximum intensity projection (MIP) image of the three-dimensional image data, a flat reformatted image at an arbitrary section in the three-dimensional image data;

a unit configured to produce data of a center line indicating three-dimensional positional information of the tubular structure, from the three-dimensional image data;

a unit configured to produce data of either a stretched image or a perpendicular sectional image of the tubular structure on the basis of the data of the center line;

a unit configured to use the data of the reference image, the either stretched image or the perpendicular sectional image, and the center line so that the reverence image with the center line overlaid thereon and either the stretched image or the perpendicular sectional image with the center line overlaid thereon are displayed side by side;

a unit configured used for specifying a position-changeable marker indicative of both view information and interested-point information toward the tubular structure on the center line in each of the reference image and the stretched image; and

a unit configured to respond to a position change of the marker on the stretched image so that the reference image into which the position change is reflected is re-depicted.

13. The analyzer according to claim 12, comprising:

a unit for displaying, on the perpendicular sectional image, a view information marker being changeable in a direction thereof and indicating the view information; and

a unit configured to re-depict the reference image to respond to a directional change of the view information marker when the direction of the view information marker is changed.

14. The analyzer according to claim 12, comprising a unit configured to display an indicator on the reference image, the indicator indicating a direction of a section of the stretched image.

15. The analyzer according to claim 14, wherein the indicator includes two markers individually placed at arbitrary positions on both wall portions of the tubular structure in the stretched image and two markers individually placed at both wall portions of the tubular structure in the reference image, the two markers on the stretched image positionally corresponding, for each wall of the tubular structure, to the two markers on the reference image.

16. The analyzer according to claim 15, wherein the indicator includes a further marker not only being superimposed on the reference image through the two markers on the reference image but also indicating a contour shape of the tubular structure.

17. The analyzer according to claim 14, wherein the indicator includes a cursor bar placed at an arbitrary poison on the stretched image and two markers individually placed on both wall portions of the tubular structure in the reference image, both side wall portions at which the two markers are individually placed being positionally corresponding to the cursor bar.